

## A TAXONOMIC STUDY ON THE GENUS *MACROMOTETTIXOIDES* ZHENG (ORTHOPTERA, TETRIGOIDEA, METRODORINAE)

DENG Wei-An

Department of Chemistry and Life Science, Hechi University, Yizhou 546300, China; E-mail: dengweian5899@163.com

**Abstract** Six species of *Macromotettixoides* Zheng were systematically dealt with in this paper. One species, *Macromotettixoides zhengi* sp. nov. is described as new to science. An updated key to the species of *Macromotettixoides* is presented. The type specimens are deposited in the Institute of Zoology, Shaanxi Normal University, Xi'an, China.

**Key words** Orthoptera, Tetrigoidea, Metrodorinae, *Macromotettixoides*, new species.

The genus *Macromotettixoides* was erected by Zheng in 2005 to accommodate one species, *Macromotettixoides jiuwanshanensis* Zheng, 2005 (type species), from Guangxi, China. Since Zheng (2005), three species of the genus *Macromotettixoides* have been described (Zheng, 2006; Zheng, 2009). Additionally, *Hyboella aelytra* Zheng, Li & Shi, 2002 was transferred to *Macromotettixoides* by Zheng in 2006. To date, the genus includes 5 species, distributed mainly in China. Herein, I. describe *Macromotettixoides zhengi* sp. nov. as new to science. An updated key to the species of *Macromotettixoides* is presented. The type specimens are deposited in the Institute of Zoology, Shaanxi Normal University, Xi'an, China.

Specimens were examined and illustrated using an XTL-1 stereomicroscope. Morphological terminology and measurement method follows that of Zheng (2005) and Deng *et al.* (2007). Measurements are in millimeters (mm).

### *Macromotettixoides* Zheng, 2005

*Macromotettixoides* Zheng; Zheng, 2005. Fauna of Tetrigoidea from Western China, 176.

*Macromotettixoides* Zheng; Deng, Zheng *et al.* Wei, 2007. Fauna of the Tetrigoidea from Yunnan and Guangxi, 160.

Type species: *Macromotettixoides jiuwanshanensis* Zheng, Wei *et al.* Jiang, 2005.

**Diagnosis.** Size small and stout. Vertex wide, it broader than an eye, anterior margin straight or slightly arched. In profile, vertex and front ridge forming an angled or rounded shape. Antennae filiform, inserted between or below lower margin of eyes. Pronotum tectiform, median keel high and distinct, anterior margin obtuse angled or straight, apex reaching top of hind femur or not. Humeral apex ridge and lower margin of pronotum connected in middle or behind middle of lower margin of pronotum. Posterior angles of lateral lobes of pronotum turning outwardly, with its apex truncate,

posterior margin of lateral lobe with one concave. Tegmina and wings absent or with degenerate wings. Lower margins of fore and middle femora straight. Ovipositor long and narrow.

The genus *Macromotettixoides* Zheng is closely related to *Macromotettix* Günther, 1939, but differs in posterior margin of lateral lobe with one concave, tegmina and wings absent or with degenerated wings.

### Key to the species of *Macromotettixoides* Zheng, 2005.

1. Wings absent ..... 2  
    With very degenerated wings ..... 5
2. Anterior margin of pronotum obtused angular ..... 3  
    Anterior margin of pronotum straight ..... 4
3. Anterior margin of vertex arched, slightly protruding before anterior margin of eyes; in profile, vertex and frontal ridge forming a right angle shape; in profile, upper margin of pronotum slightly arched; humeral angle obtusely angular; without a pair of abbreviated carinae between shoulders; hind process reaching top of hind femur; middle of posterior margin of subgenital plate with a triangular convex .....  
    ..... *M. jiuwanshanensis* Zheng  
    Anterior margin of vertex straight, not protruding before anterior margin of eyes; in profile, vertex and frontal ridge forming a rounded shape; in profile, upper margin of pronotum slightly arc before shoulders and straight behind; humeral angle arched; with a pair of abbreviated carinae between shoulders; hind process of pronotum reaching two third of hind femur; hind margin of subgenital plate of female with three teeth .....  
    ..... *M. brachynota* Zheng *et al.* Shi
4. Vertex 2 times wider than width of one eye; antennae inserted below lower margin of eyes; in profile, upper margin of pronotum distinctly arched before shoulders and straight behind; lateral keels of prozona parallel; without a pair of abbreviated carinae between shoulders .....  
    ..... *M. wufengensis* Zheng, Wei *et al.* Li  
    Vertex 1.3 times wider than width of one eye; antennae inserted between lower margin of eyes; in profile, upper margin of pronotum slightly straight; lateral keels of prozona constricted backwards; with a pair of abbreviated carinae between shoulders .....  
    ..... *M. zhengi* sp. nov.
5. Width of vertex 2 times width of an eye; lower margin of hind process straight, lateral keels of metazona straight, interspace area narrow; hind process only reaching half of hind femur; in profile, upper margin of pronotum distinctly protruding before shoulders; lower margin of midfemur undulated; in the middle of hind margin of subgenital plate of female with a triangular process .....  
    ..... *M. schwa* Zheng, Li, Wang *et al.* Niu

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Width of vertex 1.5 times width of an eye; lower margin of hind process arched, lateral keels of metazona curved, interspace area wide; hind process reaching two third of hind femur; in profile, upper margin of pronotum slightly arched before shoulders; lower margin of midfemur straight; in the middle of hind margin of subgenital plate of female concave ..... *M. aelytra* (Zheng, Li et Shi, 2002)

### 1 *Macromotettixoides jiuwanshanensis* Zheng, 2005

*Macromotettixoides jiuwanshanensis* Zheng, Wei et Jiang, 2005. *Acta Zootaxonomica Sinica*, 30 (2): 366 – 367; Zheng, 2005. Fauna of Tetrigoidea from Western China, 176; Deng, Zheng et Wei, 2007. Fauna of the Tetrigoidea from Yunnan and Guangxi, 160.

Specimens examined. China, Guangxi, Rongshui, 3 ♂♂, 1 ♀, 6 Aug. 2003; Guangxi, Luocheng, 3 ♂♂, 5 ♀, 27 July 2003; Guangxi, Huangjiang, 2 ♂♂, 1 ♀, 17 Aug. 2009; Jiangxi, Anyuan, 8 ♂♂, 16 ♀♀, 19 Aug. 2009.

Distribution. China (Guangxi and Jiangxi).

### 2 *Macromotettixoides brachynota* Zheng et Shi, 2009

*Macromotettixoides brachynota* Zheng et Shi, 2009. *Acta Zootaxonomica Sinica*, 34 (3): 574.

Specimens examined. China, Jiangxi, Longnan, 3 ♀♀, 23 July 2008.

Distribution. China (Jiangxi).

### 3 *Macromotettixoides wufengensis* Zheng, Wei et Li, 2009

*Macromotettixoides wufengensis* Zheng, Wei et Li, 2009. *Journal of Huazhong Agricultural University*, 28 (2): 143.

Specimens examined. China, Hubei, Wufeng, 1 ♀, 9 Aug. 1999.

Distribution. China (Hubei).

### 4 *Macromotettixoides zhengi* sp. nov. (Figs 1 – 7)

Description. Female. Size small and stout. Vertex wide, its width 1.3 times width of an eye (Fig. 1), anterior margin straight, slightly protruding beyond eyes (Fig. 1), median keel distinct. In profile, vertex and frontal ridge obtuse rounded together, slightly concave before lateral ocelli, frontal ridge roundly protruding between antennae (Fig. 2), width of longitudinal slightly wider than width of first segment of antennae (Fig. 3). Antenna filiform, 15-segmented, length of a segment in middle about 6 – 7 times longer than its width, inserted between lower margin of eyes (Fig. 3). Eyes globose; lateral ocelli placed in middle between eyes (Fig. 3). Pronotum tectiform, anterior margin of pronotum straight, median keel distinct (Fig. 1), upper margin of pronotum slightly straight in profile (Fig. 2). Lateral keels of prozona constricted backwards (Fig. 1), humeral angle obtuse, with a pair of abbreviated carinae between shoulders (Fig. 1). Hind process of pronotum cone-shaped, apex of hind process reaching three-quarters of hind femur (Figs 1 – 2). Humeral apex ridge and lower margin of pronotum nearly

connected in top of pronotum (Fig. 2). Lateral lobes of pronotum produced outwards, end of posterior angles truncate (Fig. 1), posterior margins of lateral lobes of pronotum with one concave (Fig. 2). Tegmina and wings absent (Fig. 2). Upper and lower margins of fore and middle femora straight (Figs 2, 4). Length of hind femur 3 times longer than width, margins of hind femur finely serrulate, antegenicular and genicular denticles acute. In dorsal view, outer side of hind tibia with 6 – 7 spines, inner side with 4 – 5 spines. Length of first segment of hind tarsi longer than third, three pulvilli equal in length, apices of all pulvilli obtuse (Fig. 5). Ovipositor narrow and long, upper and lower valvulae with slender saw-like teeth. Length of subgenital plate longer than its width, middle of posterior margin of subgenital plate with a triangular convex (Fig. 6).

Body brown. Hind femur brown, lower outer side black (Fig. 2). Hind tibia dark brown, with light ring in the base and middle.

Male. Similar to female but smaller. Subgenital plate brief cone-shaped, apex sharp (Fig. 7).

Measurements. Length of body: ♂ 6.5 – 7.0 mm, ♀ 8.0 – 8.5 mm; length of pronotum: ♂ 5.0 – 5.5 mm, ♀ 5.5 – 6.0 mm; length of hind femur: ♂ 4.0 – 4.5 mm, ♀ 4.5 – 5.0 mm.

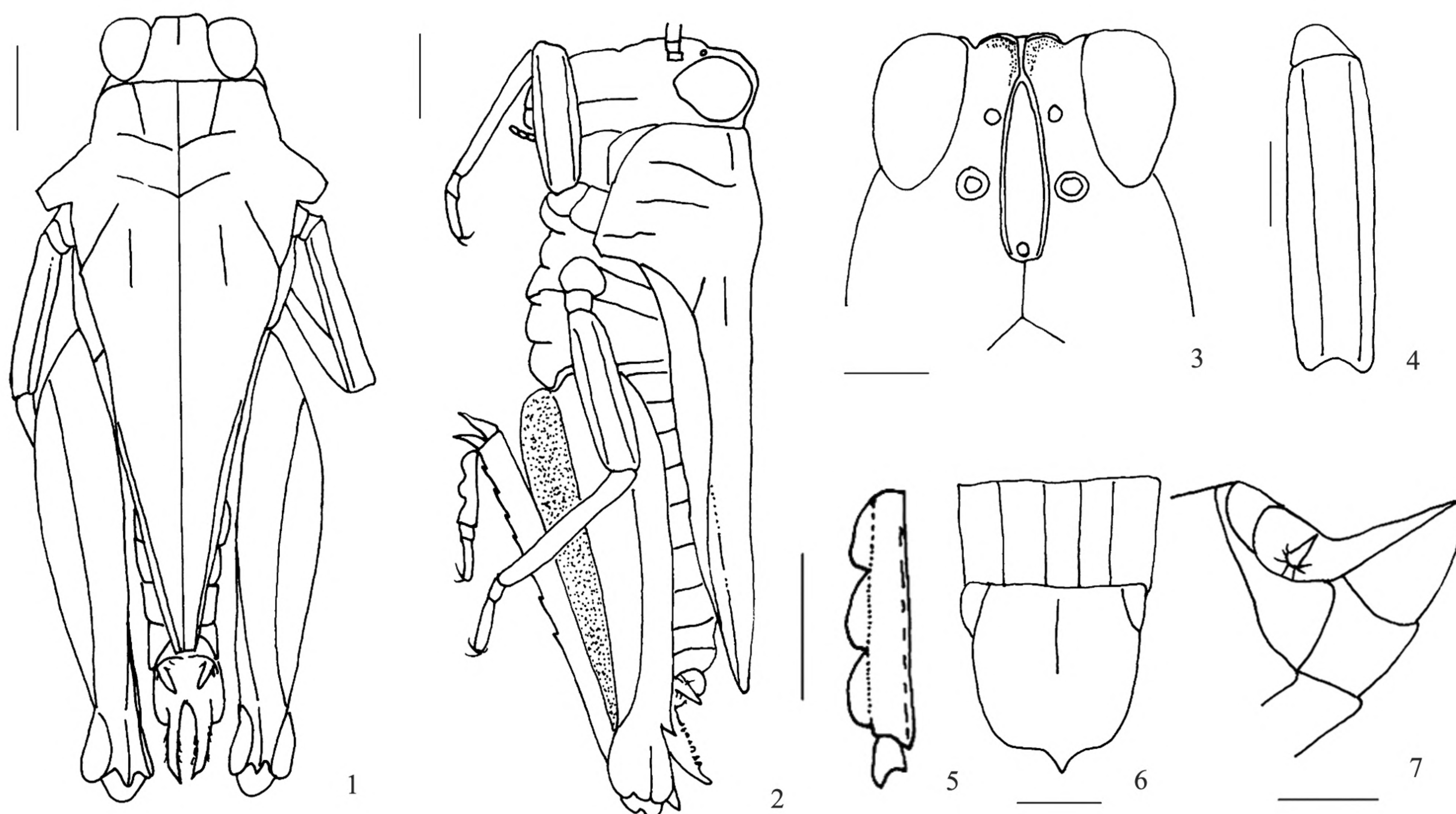
Holotype ♀, China, Guangdong Province, Meixian (Yingnashan) (24.4° N, 116.1° E; alt. 600 m), 13 Aug. 2009, collected by DENG Wei-An. Paratypes: 4 ♂♂, 12 ♀♀, same data as holotype; 2 ♂♂, 1 ♀, China, Fujian Province, Wuping (Pingchuan), alt. 500 m, 17 Aug. 2009, collected by DENG Wei-An; 1 ♂, 1 ♀, China, Jiangxi Province, Anyuan (Sanbaishan), alt. 600 m, 19 Aug. 2009, collected by DENG Wei-An. Material is deposited in the Institute of Zoology, Shaanxi Normal University, Xi'an, China.

Etymology. This species is named in honor of Professor ZHENG Zhe-Min for his outstanding contribution to the systematic entomology.

Remarks. This species can be easily distinguished from other species of the genus by anterior margin of pronotum straight, upper margin of pronotum straight in profile, tegmina and wings absent. It is similar only to *Macromotettixoides wufengensis* Zheng, Wei et Li, 2009, but differs in: width of vertex 1.3 times width of an eye, antenna inserted between lower margin of eyes, upper margin of pronotum straight in profile, lateral keels of prozona constricted backwards, with a pair of abbreviated carinae between shoulders, three pulvilli of first segment of hind tarsi equal in length.

Distribution. China (Guangdong, Fujian and Jiangxi).





Figs 1 – 7. *Macromotettixoides zhengi* sp. nov. 1. Body of female, dorsal view. 2. Body of female, lateral view. 3. Head of female, frontal view. 4. Middle femur of female, lateral view. 5. First and second posterior tarsal segments. 6. Subgenital plate of female, ventral view. 7. Subgenital plate of male, lateral view. Scale bars: 1, 2 = 1 mm, 3 – 7 = 0.5 mm.

##### 5 *Macromotettixoides cliva* Zheng, Li, Wang et Niu, 2006

*Macromotettixoides cliva* Zheng, Li, Wang et Niu, 2006. *Journal of Huazhong Agricultural University*, 25 (6): 604.

Specimens examined. China, Yunnan, Ruili, 2 ♀, 8 Aug. 2005.

Distribution. China (Yunnan).

##### 6 *Macromotettixoides aelytra* (Zheng, Li et Shi, 2002)

*Hyboella aelytra* Zheng, Li et Shi, 2002. *Journal of Shaanxi Normal University Nat. Sci. Ed.*, 30 (4): 14; Zheng, 2005. Fauna of Tetrigoidea from Western China, 167.

*Macromotettixoides aelytra* (Zheng, Li et Shi, 2002); Zheng, Li, Wang et Niu, 2006. *Journal of Huazhong Agricultural University*, 25 (6): 604.

Specimens examined. China, Guizhou, Cishui, 1 ♀, 29 Sep. 2000.

Distribution. China (Guizhou).

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## 拟大磨蚱属的分类研究（直翅目，蚱总科，短翼蚱科）\*

邓维安

河池学院化学与生命科学系 广西宜州 546300, E-mail: dengweian5899@163.com

**摘 要** 系统地研究拟大磨蚱属 *Macromotettixoides* Zheng 种类，共计有 6 种，其中有 1 新种，郑氏拟大磨蚱 *Zhengitettix zhengi* sp. nov.。文中记述每个种的引证和分布地区，并附有分种检索表。

**郑氏拟大磨蚱，新种 *Zhengitettix zhengi* sp. nov.**（图 1~7）

新种与本属其它已知种主要区别如下：前胸背板前缘平直；侧面观，前胸背板上缘近平直；缺前、后翅。模式标本

**关键词** 直翅目，蚱总科，短翼蚱科，拟大磨蚱属，新种。

**中图分类号** Q969.26

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正模 ♀，广东梅县，雁洋（阴那山），海拔 600 m，2009-08-13，邓维安采。副模：4 ♂♂，12 ♀♀，同正模；1 ♀，福建武平（平川西山），2009-08-17，邓维安采；1 ♀，江西安远（三百山），海拔 1 000 m，2009-08-19，邓维安采。

词源：新种种名以郑哲民教授的姓氏命名，以示对郑教授在分类学领域做出突出贡献的敬意。

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